

# **Terminal Learning Objective**

**ACTION:** Implement total fitness program in a company.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Implement a total fitness program in a company IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **Enabling Learning Objective (ELO) A**

**ACTION:** Define physical fitness.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Define physical fitness IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **Physical Fitness**

**The ability to function effectively in physical work, training and other activities and still have enough energy left over to handle any emergencies which may arise.**

# **Physical Fitness**

**(Functional  
Definition)**

**The ability of the body to meet present and future physical demands.**

# ELO B

**ACTION:** Describe the components of fitness.

**CONDITION:** Given FM 21-20, AR 350-41 Chapter 9 and AR 600-9.

**STANDARD:** Describe the components fitness IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **Components of Fitness**

- **Cardiorespiratory Endurance**
- **Muscular Strength**
- **Muscular Endurance**
- **Flexibility**
- **Body Composition**

# **Cardiorespiratory (CR) Endurance**

**The efficiency with which the body delivers oxygen and nutrients needed for muscular activity and transports waste products from the cells.**

# **Muscular Strength\_(MS)**

**The greatest amount of force  
that a muscle or muscle  
groups can exert in a single  
effort.**



# **Muscular Endurance\_(ME)**

**The ability of a muscle or muscle group to perform repeated movements with a sub-maximal force for extended periods of time.**

# **Flexibility (FLEX)**

**The ability to move joints or any group of joints through an entire, normal range of motion.**

# **Body Composition (BC)**

**The amount of body fat the soldier has in comparison to his/her total body mass.**

# Motor Efficiency



Combat Readiness

Motor Efficiency

Physical Fitness

***Proper training to enhance the five components previously mentioned will lead to a higher level of physical fitness. The key element that bridges the gap between physical fitness and readiness is motor efficiency.***

# **Motor Efficiency**

**The quality of movement  
performed by the body  
through space.**

# **Motor Efficiency Development**

- **Coordination**
- **Kinesthetic Awareness**
- **Speed**
- **Agility**
- **Skill**
- **Balance**
- **Power**
- **Posture**

# ELO C

**ACTION:** Describe the principles of exercise.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Describe the principles of exercise IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **Principles of Exercise**

- **Progression**
- **Regularity**
- **Overload**
- **Variety**
- **Recovery**
- **Balance**
- **Specificity**



# **FITT Factors**

- **Frequency**
- **Intensity**
- **Time**
- **Type**

# FITT Factors Applied to Physical Conditioning

**CRE**

**MS**

**ME**

**F 3 - 5 times Weekly**

**I 70-90% MHR**

**TMF -Temporary Muscle Failure  
ME- 12+ reps, MSE-8-12 reps, MS- 3-7**

**T 20+ min.**

**Based on Sets and Reps**

**T  
Running  
Cycling  
Rowing  
Road Marching  
Swimming**

**Free Weights  
Machines**

**Free Weights  
Machines  
Calisthenics  
Grass Drills  
Rifle PT**

# ELO D

**ACTION:** Describe the phases of conditioning.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Describe the phases of conditioning IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **Phases of Conditioning**

- **Preparatory**
- **Conditioning**
- **Maintenance**

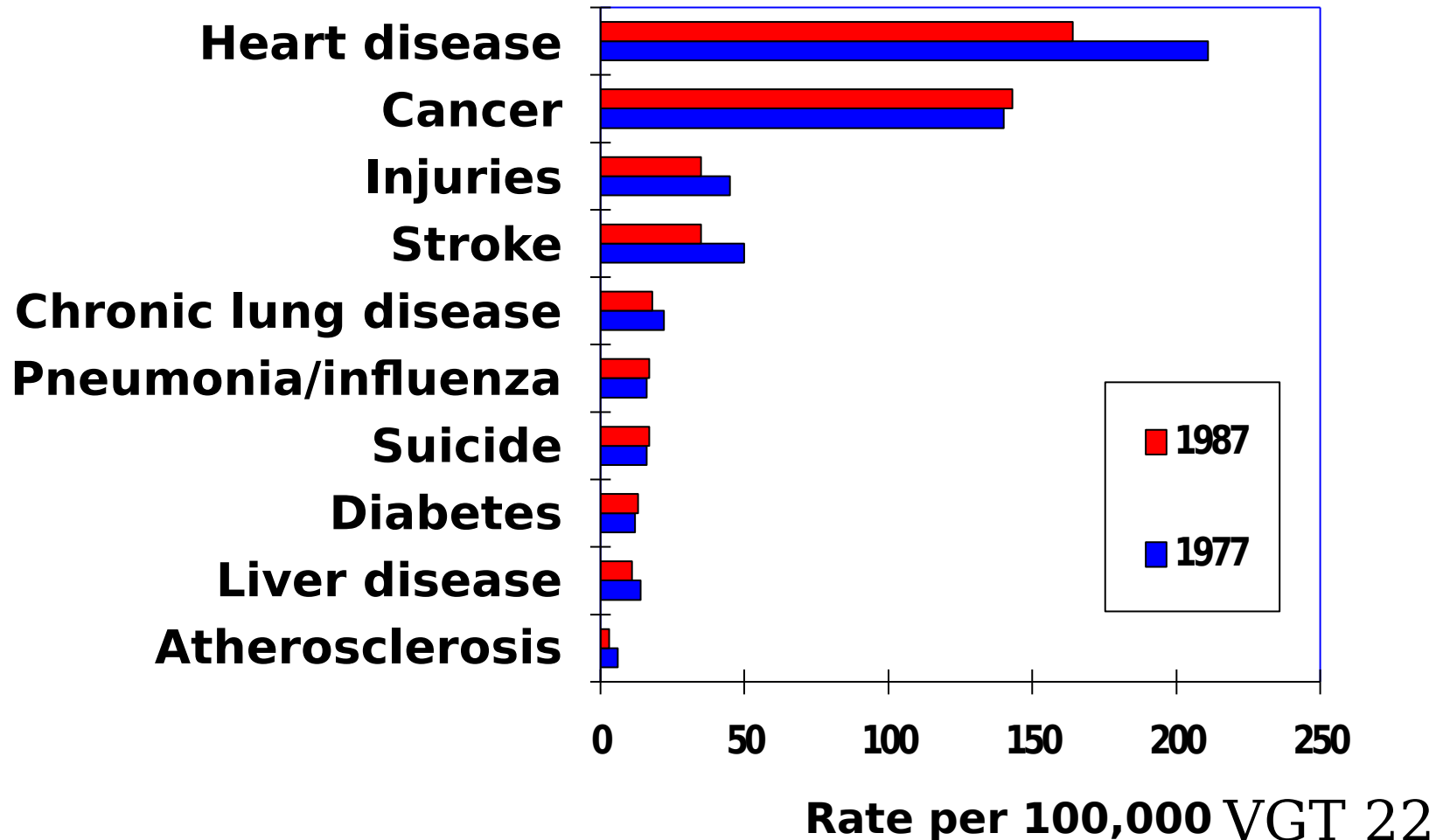
# ELO E

**ACTION:** Identify the major forms of cardiovascular disease.

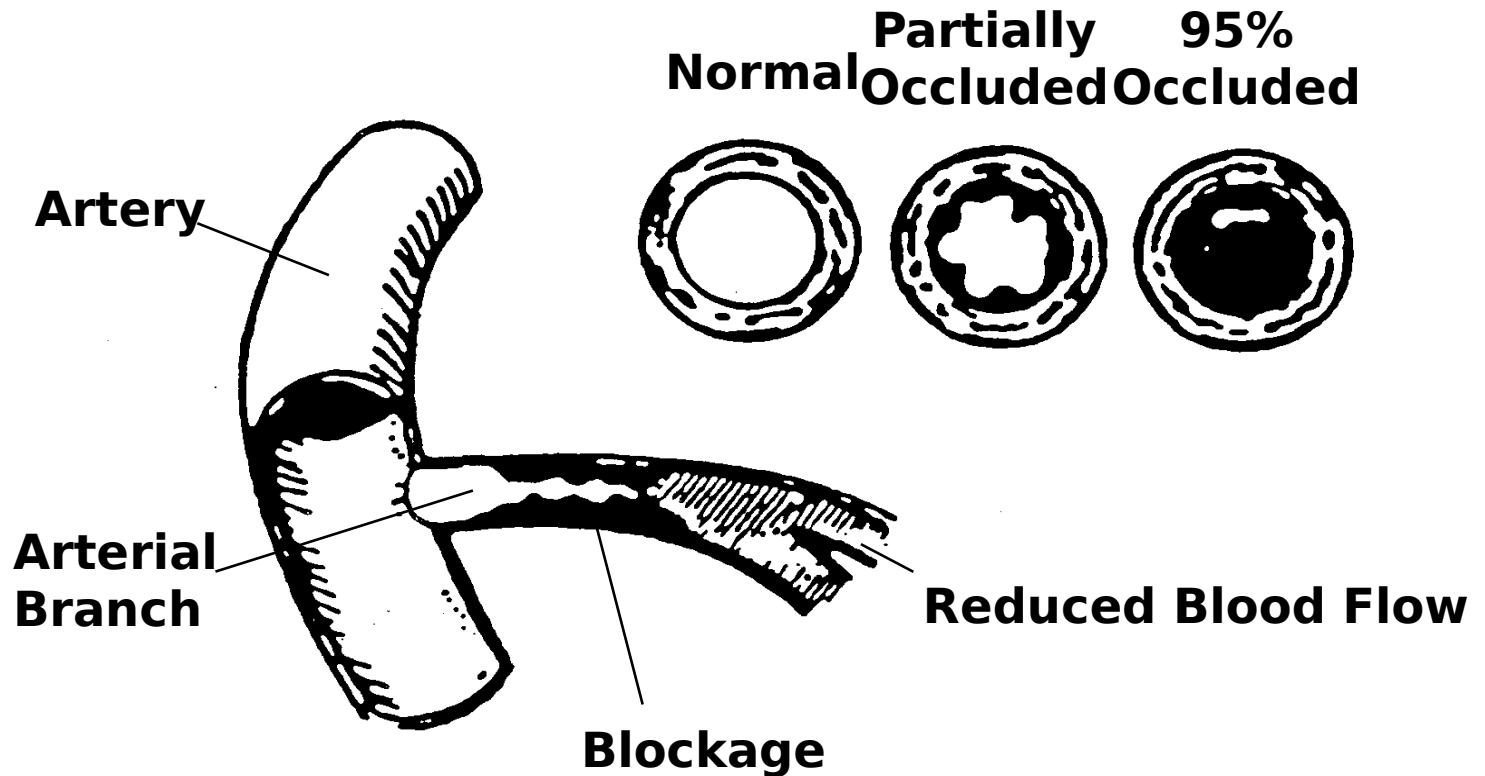
**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Identify the major forms of cardiovascular disease IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# Causes of Death



# Effects of Atherosclerosis



**Gradual narrowing of a Coronary Artery through the progression of Atherosclerosis**

# **The Injury Hypothesis**

**The atherosclerotic process is initiated by injury to the arterial wall. This process may be caused by the following risk factors:**

- Elevated Blood Cholesterol**
- High Blood Pressure**
- Cigarette Smoke**



# ELO F

**ACTION:** Identify the risk factors of cardiovascular disease (CVD).

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Identify the risk factors of (CVD)  
IAW

FM 21-20, AR 350-41 Chapter 9 and AR 600-9.

# **Risk Factors**

## **Major Risk Factors That Can Be Changed**

**Cigarette Smoking  
High Blood Pressure  
Blood Cholesterol Levels  
Physical Inactivity**

## **Major Risk Factors That Cannot Be Changed**

**Heredity  
Male Gender  
Increasing age**

## **Contributing Factors**

**Diabetes  
Obesity  
Stress**

# Hypertension

- A condition causing the blood to press too hard against the walls of your arteries.
- This increased pressure causes injury to the inside of the arterial walls (Injury Hypothesis).

# Hypertension Levels

## Risk Classifications

	<b>Low Risk</b>	<b>Mild Risk</b>	<b>Moderate Risk</b>	<b>High Risk</b>
<b>Systolic</b>	<b>&lt;135</b>	<b>135-159</b>	<b>160-199</b>	<b>&gt;200</b>
<b>Diastolic</b>	<b>&lt;85</b>	<b>85-109</b>	<b>110-114</b>	<b>&gt;115</b>

# **Cholesterol**

- **Used in all cell walls**
- **Used to manufacture bile**
- **Used to manufacture vitamin D**
- **Used to manufacture some hormones**

# **Total Cholesterol Risk Levels**

<b>Low Risk</b>	<b>&lt; 160 mg/dl</b>
<b>Mild Risk</b>	<b>160 - 190 mg/dl</b>
<b>Moderate Risk</b>	<b>190 - 200 mg/dl</b>
<b>High Risk</b>	<b>&gt; 200 mg/dl</b>

# Ratio of Total Cholesterol to HDL

**Low**

**3.5**

**Mild**

**3.5-5.0**

**Hig**

# **Average Cost of Smoking**

- **On the average, 27% of Americans smoke. The number of teenage smokers has increased.**
- **Cost to society includes:**
  - **increased health care**
  - **lost productivity**
  - **fire damage**
  - **lost lives**



# Smoking

- **The Surgeon General - “Cigarette smoking is considered the most important of the known modifiable risk factors for coronary heart disease in the United States.”**
- **The risk and frequency of heart attacks are greater in persons who smoke and increase according to the number of cigarettes smoked. Smoking damages arterial walls!**
- **Compared with current smokers, the rate of heart attacks is lower among**

# Poisons

**Cigarette smoke contains over 200 poisons which include:**

- Benzene
- Carbon Dioxide
- Carbon Monoxide
- Hydrogen Cyanide
- Hydrocarbons
- Formaldehyde
- Lead
- Nicotine\*
- Phenol

***\*Nicotine has an addictive potential similar to hard drugs such as crack cocaine! People need a program to help them quit and support to keep them from smoking again.***

# Short/Long-term Effects

## Short-term

- Heart rate & blood pressure rise
- Senses dull - smell & taste
- Bronchioles constrict
- Skin temperature decreases

## Long-term

- Bronchitis
- Emphysema
- Cancer

# **Other Smoking Risks**

- **Blood is thickened**
- **Early wrinkles**
- **Impotence**
- **Decrease in vitamin C absorption**
- **Insulin resistance**
- **Decrease HDL**

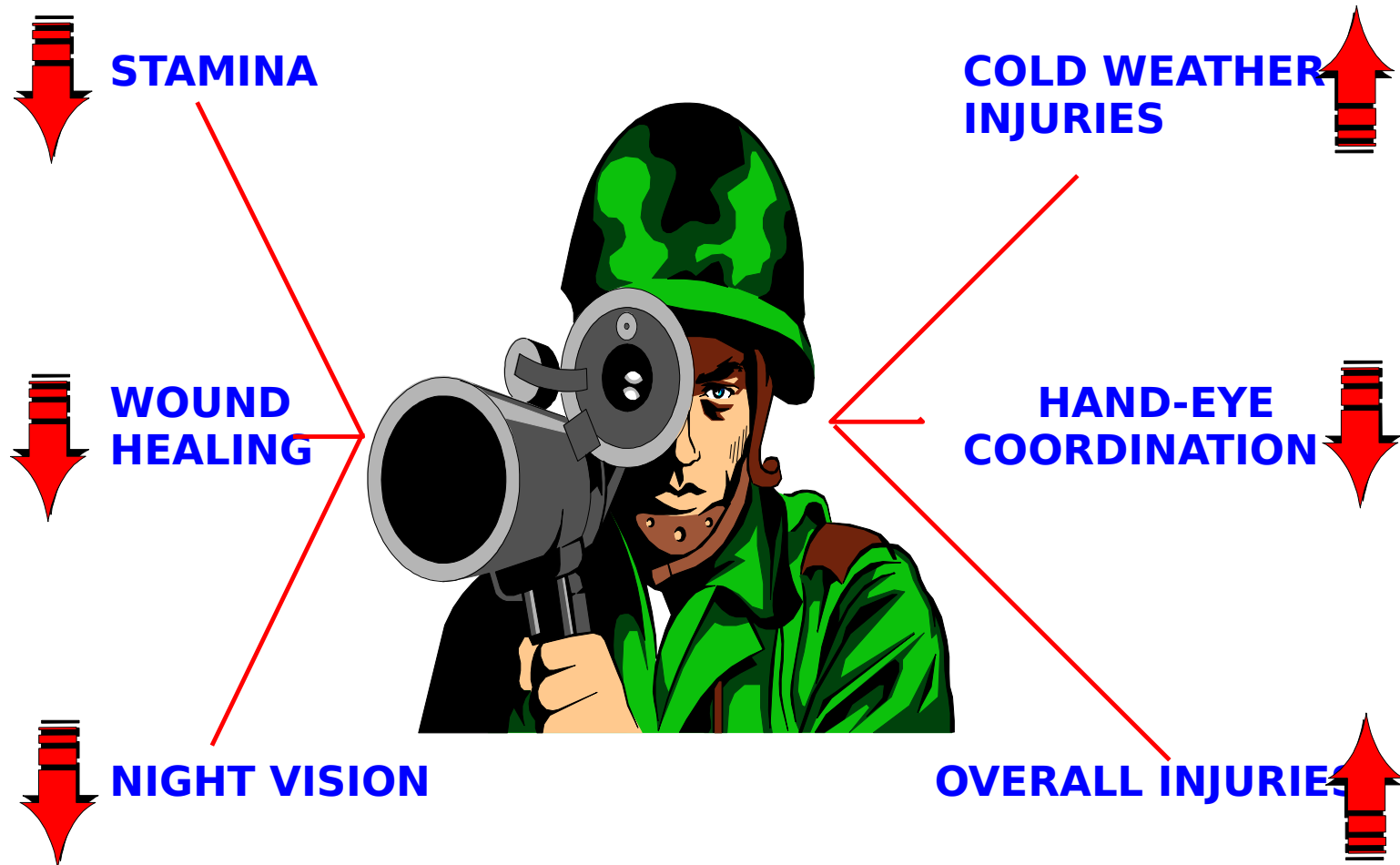
# Smoking and the APFT

	<u>Smokers</u> (N = 1756)	<u>Non-Smokers</u> (N = 1530)
AGE	25.5 yrs	24.5 yrs
HT (cm)	175.0 cm	175.0 cm
WT (kg)	74.5 kg	75.2 kg
BF %	17.8 %	18.0 %
PU	36.8	40.2
SU	50.4	54.9
2-MR	15:35	14:43
		VGT 37

# **Smokeless Tobacco**

- **Cancers**
  - mouth
  - throat
- **Tooth Decay**
- **Gum Disease**

# Adverse Impact of Tobacco on Soldier Readiness



# **Tobacco Cessation**

## **Methods to Stop**

- **Patches**
- **Acupuncture**
- **Aversion  
Therapy**
- **Hypnosis**
- **Pain Stimulus**
- **Nicorette**

## **Sources of Help**

- **Health Promotion**
- **American Heart  
Association**
- **American Lung  
Association**
- **American Cancer  
Society**
- **Local Hospital**



# Inactivity

**Regular aerobic activity  
increases  
your exercise capacity and  
plays a  
role in the prevention of CVD.**

# **Contributing Risk Factors**

- **Obesity**
- **Diabetes**
- **Stress**

# **Major Non-modifiable Risk Factors**

- **Heredity**
- **Gender**
- **Age**

# **Heart Attack Symptoms**

- Pressure in the chest
- Heaviness
- Squeezing
- Discomfort
- Burning

# CV Disease Risk Matrix

AGE	10 to 20 1	21 to 30 2	31 to 40 3	41 to 50 4	51 to 60 6	Over 61 6
HEREDITY	No known history of heart disease 1	1 relative over 60 with CV disease 2	2 relatives 60 with CV disease 3	1 relative under 60 with CV disease 4	2 relatives 60 with CV disease 6	3 relatives under 60 with CV disease 7
BODY COMP	Male: <15% Female: <21% 0	15.1 to 18 21.1 to 24 1	18.1 to 21 24.1 to 27 2	21.1 to 24 27.7 to 30 3	24.1 to 27 30.1 to 33 5	>27 >33 7
TOBACCO SMOKING	Non-smoker* 0	cigar and/or pipe 1	<10 cigarettes 2	20 cigarettes / day 4	30 cigarettes / day 6	40>a day 10
EXERCISE	Intense occupational and recreational exertion 1	Moderate occupational and recreational exertion 2	Sedentary work and intense recreational exertion 3	Sedentary work and moderate recreational exertion 5	Sedentary work and light recreational exertion 6	Complete lack of physical exertion 10
HDL RATIO or DIET FAT %	Ratio <3.5 or <25% fat 1	Ratio 3.6 to 4.5 or <30% fat 2	Ratio 4.6 to 5.5 or <35% fat 3	Ratio 5.6 to 6.5 or <40% fat 4	Ratio 6.6 to 7.5 or <45% fat 5	Ratio >7.6 or >45% fat 7
SYSTOLIC BLOOD PRESSURE	100 or less 1	101 - 120 2	121 - 140 3	141 - 160 4	161 - 179 6	>180 8
GENDER	Female <40 1	Female 40 - 60 2	Female >60 3	Male 5	Stocky Male 6	Bald Stocky Male 7

# Exercise

## Effects

- Reduces Blood Pressure
- Reduces Total Cholesterol
- Increases HDL
- Reduces Stress
- Reduces Obesity
- Reduces Dependence on Cigarettes
- Enhances Production of Insulin

# ELO G

**ACTION: Identify the 7-step planning process of unit program development.**

**CONDITION: Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.**

**STANDARD: Identify the 7-step planning process of unit program development IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.**

# **7-Step Planning Process**

**STEP 1: Analyze the Mission**

**STEP 2: Develop Fitness Objectives**

**STEP 3: Assess the Unit**

**STEP 4: Determine Training Requirements**

**STEP 5: Develop Fitness Tasks**

**STEP 6: Develop a Training Schedule**

**STEP 7: Conduct and Evaluate Training**



# **STEP 1: Analyze the Mission**

- **Wartime mission**
- **Mission Essential Task List (METL)**
- **Commander's intent**
- **ARTEP/ MTP experience (JRTC and NTC)**
- **NCO experience**

# **STEP 2: Develop Fitness Objectives**

- 1. Identify specific fitness tasks.**
- 2. Observable, measurable, quantifiable**
- 3. Realistic and performance oriented**

# **Fitness Objectives**

- 1. Meet unit foot march standards.**
- 2. Complete rope climb w/ BDU's , boots, Kevlar and helmet.**
- 3. Execute minimum of six pull ups.**
- 4. Run five miles.**
- 5. No APFT failures.**
- 6. No soldiers on weight control program.**
- 7. No more than 10% of company on profile.**

# **Develop Performance Measure**

## **Light infantry company performance measure**

- 1. Perform 52 push-ups, 62 sit-ups and 2-MR  $\leq$  14:54.**
- 2. Perform 6 pull-ups.**
- 3. Carry equal size soldier 100 meters.**
- 4. Lift 130 pounds to a height of 48-52 inches.**
- 5. Road march 12 miles with 35 lbs. ALICE pack  $\leq$  3 hours.**

# **Develop Performance Measures**

## **Medical company performance measures**

- 1. Perform a 400-meter fireman's carry with an equal size soldier in less than 3 minutes.**
- 2. Perform a timed 100-meter skedco pull with 135 lbs inside.**
- 3. Perform a landing zone inverted Y shuttle.**
- 4. Set up a GP medium  $\leq$  15 minutes.**

# **STEP 3: Assess the Unit**

## **Utilizing performance**

- measures:**
- 1. Identify current fitness level.**
  - 2. Test standardized performance measures.**
  - 3. Identify unit strengths and weaknesses.**

# **STEP 4: Determine Training Requirements**

**1. Commander's Intent**

**2. Mission / METL**

**3. APFT (secondary importance)**

# **STEP 5: Develop Fitness Tasks**

- 1. Base fitness tasks on the mission and METL.**
- 2. Conduct realistic training (road march with a combat load for a realistic distance over terrain).**
- 3. Train all components of physical fitness and condition the entire body with a wide variety**



# Battle-focused PT Worksheet

INDIVIDUAL TASK	REQUIRED PHYSICAL PERFORMANCE	PRIMARY WAY TO DEVELOP PERFORMANCE	SECONDARY BENEFITS	RESOURCES

# **STEP 6: Develop a Training Schedule**

- 1. Review the training objectives.**
- 2. Determine training methods and frequency.**
- 3. Train all five components of physical fitness  
and adhere to the seven principles of exercise.**

# **Develop an Event**

## **List**

**Sandbag Circuit**

**Aquatics**

**Strength Training Machine**

## **Circuit**

**Calisthenic Circuit**

**Ability Group Run**

**Fartlek Run**

**Interval Run**

**Road March**

**Obstacle/Confidence Course**

**Cross-country Run**

**Rifle PT**

**Battle-focused PT Circuit**

# **STEP 7: Conduct and Evaluate Training\_**

- 1. Execute battle-focused physical training.**
- 2. Re-evaluate performance at 6 and 10 weeks  
using standardized assessment techniques.**
- 3. Allow for continuous feedback.**

# ELO H

**ACTION:** Discuss the 4 week training schedule using the 7 principles of exercise.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Discuss the 4 week training schedule using the 7 principles of exercise IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# 4 WEEK TRAINING SCHEDULE MONTH #2

SUN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT
	A: Confidence Obstacle Course D: 90 Min I: 70-90% MHR/ TMF	A: Ability Group Run D: 2 miles I: 70% MHR	A: Push-up/Sit-up Improvement D: 45 Min I: TMF	A: Road March D: 2 hours I: 6 miles @ 20 min/mile w/ 30 lb ruck, weapon, LCE, softcap	A: Individual Movement Tech. Circuit D: 40 Min I: 80% MHR/ TMF	
	A: TOC Equip Circuit D: 50 Min I: TMF/80% MHR	A: Ability Group Run D: 3 Miles I: 75% MHR w/100 Push-ups and Sit-ups	A: Sandbag Circuit D: 60 Min I: TMF/70% MHR	A: Aquatic Calisthenics D: 45 Min I: 70-90% MHR	A: Weight Training for Performance D: 75 Min I: TMF	
	A: Ability Group Run D: 3 miles I: 75-80% MHR w/ 150 Push-ups and Sit-ups	A: Bayonet Assault Course D: 90 Min I: 80-90% MHR/ TMF  BDU + Boots	A: 1000m Swim D: 45 Min I: 70-90% MHR	A: Litter Relays D: 60 Min I: 70-90% MHR/ TMF  BDU + Boots	A: Cross Country Run D: 40 Min I: 70% MHR  BDU w/ athletic footwear of choice	
	A: Log Drills D: 60 Min I: TMF (Anaerobic Power)	A: Interval Training D: 60 Min I: As per 2 Mile Run Breakdown 5 X 400m with Flexibility Improve. Training	A: Rifle Drills B: 60 Min I: TMF/70% MHR	A: Road March D: 105 min I: 6 miles @ 17.5 min/mile w/ 30lb ruck, weapon, LCE, softcap	A: Single Station Machine Circuit to Music D: 60 Min I: TMF/80% MHR	

# **SEVEN PRINCIPLES OF EXERCISE**

**1. PROGRESSION**

**2. REGULARITY**

**3. OVERLOAD**

**4. VARIETY**

**5. RECOVERY**

**6. BALANCE**

**7. SPECIFICITY**

# **JUSTIFICATION TOOLS**

**1. TECHNIQUES TO MANIPULATE  
TRAINING EFFECT**

**2. BASED ON THE COMPONENTS  
OF  
FITNESS**

**3. IAW PRINCIPLES OF EXERCISE**



# PROGRESSION TOOLS

## Cardiorespiratory (CR) Endurance:

Elevate THR Increase  
duration

Decrease min/mile Increase  
distance

## Muscular Strength / Muscular Endurance (MSE):

Increase # sets Increase #  
repetitions

Increase weight Increase  
resistance

Decrease rest interval

## Flexibility (FLEX):

Increase duration

VGT 65

# **REGULARITY TOOLS**

**CR: Train 3 x per week.**

**Split training effect with MSE on circuits.**

**MSE: Train 3 x per week.**

**Utilize circuits, aquatics, weight training and push-up/sit-up improvement.**

**FLEX: Train daily, performing stretching exercises before during and after each workout. Flexibility training during cool-down periods is a good method to enhance range of motion.**

# VARIETY TOOLS

**CR: Ability Group Run**

**Intervals**

**Cross-country Run**

**Aquatics**

**Hill Sprints**

**Relays**

**MSE: Sandbag Circuit**

**Rifle Drills**

**Weight Training**

**Road**

**March**

**Rope Climbing**

**FLEX:**

**Static**

**Passive**

**PNF**

VGT 67

# RECOVERY TOOLS

**CR: Alternate: CR and MSE days**  
**Hard and Easy days**  
**Long/Slow and Short/Fast**  
**High Impact and Low Impact**

**MSE: Allow 48 hours rest between working  
the same muscle groups by alternating:**  
**Total-body Workout and Rest**  
**Upper and Lower-body Muscle**

**Groups**

**Push and Pull Muscle Groups**

**FLEX: Properly conducted flexibility  
improvement training may be performed**

# BALANCE

**TOOLS**  
Balance is based on incorporating all five components of fitness in your program.

**CR:**      **Stairs**                      **Long slow distance**  
                 **Interval training** **Cross-country**  
**runs**  
                 **Aquatics**

**MSE:**              **Upper-body vs Lower-body**  
                 **Push vs Pull muscle groups**  
                 **Muscle balance-incline, decline and**  
**flat**                      **bench press**

VGT 69

**FLEX:** **Utilize different stretching**

# **SPECIFICITY TOOLS**

**Train specifically to meet training requirements**

**Ruck runs**

**Road marching**

**Cross-country runs**

**Flak vest PT**

**Log drills**

**Rope climbs**

**Individual movement techniques**

**Litter relays**

**Buddy carries**

**Watercan PT**

# **SUMMARY**

- 1. Tools allow us to manipulate training effect.**
- 2. Train soldiers and keep them combat capable.**
- 3. Provide variety in unit PT program.**

# 4 WEEK TRAINING SCHEDULE MONTH #2

SUN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT
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# **MSE OVERLOAD EXAMPLE**

**During Week 2, MSE Overload is achieved through the TOC equipment circuit, sandbag circuit, and weight training session.**

**Each training session is conducted to temporary muscle failure.**

**Training time is never less than 50 minutes.**

**Type of exercise is varied.**

# **CR PROGRESSION EXAMPLE**

**During the four week training period, ability group runs progress from 2 miles at 70% MHR in week one, to 3 miles at 75% MHR during week two, to 3 miles at 75-80% MHR in week three. Overload is based on the objective of the training session.**

# **FLEXIBILITY BALANC**

**Balance is achieved by incorporating all three stretching techniques (static, passive, PNF) and by stretching all muscle groups.**

**For example, week four interval training involves flexibility improvement. Balanced lower-body stretching on this day will incorporate hip flexor and gluteus maximus, VGT 75 quadriceps and hamstrings**

# **GENERAL RULES**

- **Don't progress more than 5-10% per week for MSE.**
- **Don't progress more than 10% per week for**
- **Every day is a recovery day.**
- **Include combined training events (CR and**
- **CR is not limited to just running.**

# ELO I

**ACTION:** Describe training programs for soldiers in identified special populations.

**CONDITION:** Given FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

**STANDARD:** Describe training programs for soldiers in identified special populations IAW FM 21-20, AR 350-41, Chapter 9 and AR 600-9.

# **SPECIAL POPULATIONS**

- **Medical Profile**
  - **Injury**
  - **Pregnancy**
- **Overweight**
- **APFT Failure**
- **New Soldier**

# **GENERAL RULES**

- 1. You are not a doctor.**
- 2. Do not cause further injury.**
- 3. Do not make PT punitive.**
- 4. Train with your unit when possible.**

# PROFILE PT\*

1. CR: low impact - stationary cycle, walking, rowing machine and aquatics.
2. MS: sympathetic stimulation and use of strength training machines.
3. ME: aquatics, surgical tubing, calisthenics and conditioning drills.
4. FLEX: static, passive and PNF techniques.
5. BC: calculate caloric intake vs expenditure.

**\* Remember rules #1 and #2**



# **OVERWEIGHT**

**1. Education on caloric intake vs expenditure**

- Diet and exercise**

**2. Long slow duration and low impact activities**

- Prevent overuse injuries**

**3. MSE/FLEX**

- Overweight soldiers should not be limited**

**in these areas. Ensure proper progression.**

# **APFT FAILURE\***

- 1. Progression: Do not exceed 10% per week for CR and MSE training.**
- 2. Balance: Ensure all muscle groups are trained.**
- 3. Recovery: This is often violated when additional training is conducted. Utilize low impact activities such as aquatics, stationary cycle and strength training machines. These activities will provide variety, as opposed to just push-ups, sit-ups and running.**

***\* Pay attention to rules 2, 3, and 4.***

# **NEW SOLDIER**

- 1. Who is a new soldier?**
- 2. Make the new soldier mission capable.**
- 3. Progression is the key: Train motion, form, and muscle memory. Gradually increase intensity over a period of weeks.**
- 4. Exercise prescription during new soldier PT**

# **PREGNANCY**

- 1. Rule #1: You are not a doctor.**
- 2. Reference FM 21-20, Appendix A (Physiological Differences).**
- 3. Develop and implement a post-wide pregnancy PT program.**
- 4. Activities should include: low impact exercise, strength training machines and flexibility training. Do not regulate the pregnant soldier's diet.**
- 5. Always work within the physician's guidelines.**

# **SPECIAL POPULATIONS**

- 1. You are not a doctor.**
- 2. Do not cause further injury.**
- 3. Do not make pt punitive.**
- 4. Train with your unit when possible.**

***\* It is the MFT's responsibility to develop training programs for special populations that are IAW with the four rules listed above and the seven principles of exercise.***